

Claims

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1. Communication network having a packet switched protocol based cellular telephone network (1) comprising a first layer (3) for transferring signalling information assigned to a telephone call being processed by the communication network, a second layer (4) for transferring payload information assigned to the telephone call and interface means (20) for coupling the cellular telephone network (1)

10 to a further network (2), the interface means (20) comprising signalling information exchange function between the cellular telephone network (1) and the further network (2) and payload information exchange function between the cellular telephone network (1) and the further network (2),
15 the first layer (3) and the second layer (4) of the cellular telephone network (1) being coupled to the interface means (20), wherein the second layer (4) of the cellular telephone network (1) transfers the payload information of the telephone call to and from the interface means (20) on a direct route (11) assigned to the telephone call within the second layer (4).

2. Communication network of claim 1, wherein the second layer (4) of the cellular telephone network (1) comprises a number of base transceiver stations (7, 8, 9), each base transceiver station (8) handling the radio link protocol functions to mobile stations (5) within a cell area assigned to the respective base transceiver station (8) and wherein the base transceiver station (8) being directly connected to the interface means (20) for payload information exchange within the second layer (4).

3. Communication network of claim 2, wherein the interface means (20) comprises media gateway means (10) for payload information exchange between the cellular telephone network

(1) and the further network (2) and to be coupled directly to the base transceiver stations (8).

4. Communication network of one of the claims 1 to 3, wherein the first layer of the cellular telephone network (1) comprises at least one mobile services switching center (16) being coupled to the interface means (20).

5. Communication network of claim 4, wherein the interface means (20) comprises media gateway means (10) for payload information exchange between the cellular telephone network part (1) and the further network (2) and wherein the mobile services switching center (16) is connected to a media gateway (10) of the interface means (20) to control the media gateway (10).

10 6. Communication network of one of the preceding claims, wherein the first layer (3) comprises at least one mobile services switching center (16) being coupled to the interface means (20) for signalling information exchange.

15 7. Communication network of claim 6, wherein the interface means (20) comprises a signalling gateway (21) for signalling information exchange between the cellular telephone network (1) and the further network (2) and wherein the mobile services switching center (16) is connected to the signalling gateway (21) to exchange signalling information between the signalling gateway and the mobile services switching center.

20 8. Communication network of one of the preceding claims, wherein the first layer of the cellular telephone network comprises at least one mobile services switching center and at least one base station controller (14) being coupled to a number of base transceiver stations (7, 8) of the second

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layer and being connected to at least one mobile services switching center (16) wherein the base station controller (14) controls each of the base transceiver stations (7, 8) by means of a device control protocol function and
5 communicates to the mobile services switching center (16) by means of an application signalling protocol function.

10 9. Communication network of one of the preceding claims, wherein the cellular telephone network part (1) is a GSM network.

15 10. Communication network of one of the preceding claims, wherein the further network (2) is a packet switched network.

20 11. Communication network of claim 10, wherein the packet switched network is the Internet, a VoIP network, an Internet Protocol network, a GPRS network or a UMTS network.

25 12. Communication network of claim 9, wherein the further network (2) is a circuit switched network.

30 13. Communication network of claim 12, wherein the circuit switched network is a ISDN network, a Public Land Mobile Network PLMN network or a Public Switched Telephone Network PSTN network.

35 14. Method for operating a communication network having a packet switched protocol based cellular telephone network (1) comprising a first layer (3) for transferring signalling information assigned to a telephone call being processed by the communication network, a second layer (4) for transferring payload information assigned to the telephone call and interface means (20) for coupling the

cellular telephone network (1) to a further network (2),
the interface means (20) comprising a signalling
information exchange function between the cellular
telephone network (1) and the further network (2) and a
5 payload information exchange function between the cellular
telephone network (1) and the further network (2), the
first layer (3) and the second layer (4) of the cellular
telephone network (1) being coupled to the interface means
10 (20), wherein the payload information of the telephone call
is transferred to and from the interface means (20) via a
direct route or through-connection assigned to the
telephone call and comprised by the second layer (4).

15. Method of claim 14, wherein, after initialising the
telephone call, in a base transceiver station (8) of the
second layer (4) which is assigned to said call, base
transceiver station (BTS) address information identifying
the base transceiver station (8) is generated and forwarded
via the first layer (3) of the cellular telephone network
20 (1) to the interface means (20), and
interface address information or media gateway address
information is generated in the interface means (20) and
forwarded via the first layer (3) of the cellular telephone
network (1) to the base transceiver station (8) for
25 establishing a direct through-connection (11) within the
second layer (4) between the base transceiver station (8)
and the interface means (20) to allow direct data, payload
and call information exchange between the interface means
(20) and the base transceiver station (8) and vice versa.

30 16. Method of claim 14 or of claim 15, wherein at least one
base transceiver station (8) of the second layer (4) is
provided, the base transceiver station (8) handles the
radio link protocol functions to mobile stations (5) within
35 an assigned cell area, the method providing a payload

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protocol function for direct payload information exchange between the base transceiver station (8) and the interface means (20) via the second layer (4) of the cellular telephone network (1).

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17. Method of one of the claims 14 to 16, wherein at least one mobile services switching center (16) is provided within the first layer (3) of the cellular telephone network (1), the method providing a mobile services switching center (MSC) device control protocol for signalling information exchange between the mobile services switching center (16) and the interface means (20).

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18. Method of claim 17, the interface means (20) comprising a media gateway (10) for payload information exchange between the cellular telephone network (1) and the further network (2) and the mobile services switching center being connected to the media gateway to exchange signalling information between the media gateway (10) and the mobile services switching center (16) by the mobile services switching center (MSC) device control protocol function.

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19. Method of one of the claims 14 to 18, wherein the first layer (3) of the cellular telephone network (1) comprises at least one mobile services switching center (16) being coupled to the interface means (20) and the method providing a trunk signaling protocol function for signaling information exchange between the mobile services switching center (16) and the interface means (20).

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20. Method of claim 19, the interface means comprising a signalling gateway means (21) for signalling information exchange between the cellular telephone network (1) and the further network (2) and the mobile services switching center (16) being connected to the signalling gateway means

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(21), the trunk signalling protocol function is used to exchange signalling information between the signalling gateway means (21) and the mobile services switching center (16) within the first layer (3).

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21. Method of one of the claims 14 to 20, wherein the first layer (3) of the cellular telephone network (1) comprises at least one mobile services switching center (16) and at least one base station controller (14) coupled to a number of base transceiver stations (7, 8) of the second layer (4) and being connected to the mobile services switching center (16), the method providing a device control protocol function to be established between the base station controller (14) and each of the base transceivers (7, 8) for controlling of the base transceiver stations (7, 8) and the information exchange between the base station controller and the base transceiver stations, and the method providing an application signalling protocol function to be established between the base station controller and the mobile services switching center (16).

22. Method of claim 21, wherein, after initiating a new call by a mobile station (5), a call identification information being assigned to the new call is generated and stored within the mobile services switching center (16), then the call identification information is sent by the application signalling protocol function from the mobile services switching center (16) to the base station controller (14).

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23. Method of claim 22, wherein the call identification information from the mobile services switching center (16) is stored within the base station controller (14) and a corresponding request is forwarded to a base transceiver station (8) by means of the device control protocol

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function being established between the base station controller and the base transceiver station.

24. Method of claim 23, wherein after receiving the call identification information from the base station controller (14) a base transceiver station (BTS) address information is generated in the base transceiver station (8), the base transceiver station (BTS) address information identifies the base transceiver station (8) being assigned to the call and the call within the base transceiver station (8) in order to allow direct payload information exchange within the second layer of the cellular telephone network between the base transceiver station (8) and the media gateway (10).

25. Method of claim 24, wherein the generated base transceiver station (BTS) address information is forwarded to the base station controller (14).

26. Method of one of the claims 23 to 25, wherein the call identification information from the base station controller (14) is stored in the base transceiver station (8).

27. Method of claim 26, wherein after receiving the base transceiver station (BTS) address information from the base transceiver station (8) the base transceiver station (BTS) address information is forwarded to the mobile services switching center (16) from the base station controller (14).

28. Method of claim 27, wherein after requesting a connection from the media gateway (10) the call identification and the base transceiver station (BTS) address information are sent to the media gateway (10)

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utilising the mobile services switching center (MSC) device control protocol function.

29. Method of claim 28, wherein a request for through-connection is sent from the mobile services switching center (16) to the media gateway (10) by means of the mobile services switching center (MSC) device control protocol function.

10 30. Method of one of the claims 26 to 29, wherein media gateway address information is generated in the media gateway (10) which identifies the media gateway (10) and the call in the media gateway (10) and then forwarded back to the mobile services switching center (16) by means of
15 the mobile services switching center (MSC) device control protocol.

20 31. Method of claim 30, wherein after receiving the media gateway address information from the media gateway (10) the media gateway address information is forwarded from the mobile services switching center (16) via the base station controller (14) to the base transceiver station (8) for establishing a through-connection between the media gateway (10) and the base transceiver station (8) on the basis of
25 the BTS address information and the media gateway address information in order to permit direct exchange of information between the media gateway (10) and the base transceiver station (8) and vice versa.

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